PROVISIONAL PATENT APPLICATION

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Elvina Smith
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SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that Joel Ronning, a resident of Excelsior, Minnesota and a

citizen of the United States; Kelly Wical, a resident of Hastings, Minnesota and a citizen of the

United States; Jim Pichler, a resident of Golden Valley, Minnesota and a citizen of the United

States; Sean Ryan, a resident of Deephaven, Minnesota and a citizen of the United States; and

Marc Kukura, a resident of Bloomington, Minnesota and a citizen of Canada, have invented

certain new and useful improvements in

APPARATUS AND METHOD FOR PROVIDING ELECTRONIC COMMERCE

of which the following is a specification.

APPARATUS AND METHOD FOR PROVIDING ELECTRONIC COMMERCE

FIELD OF THE INVENTION

The present invention relates to an apparatus and method for providing electronic

5   commerce and for managing various aspects of electronic commerce.

BACKGROUND OF THE INVENTION

Electronic commerce involves transactions occurring through the World Wide Web,

referred to as the web, over the Internet. These transactions typically involve the purchase of

products by consumers. Sellers or retailers may maintain web sites, and consumers may

10   electronically access those web sites in order to view descriptions of products. In some

instances, a user may even sample the product. For software products, for example, a user may

have an opportunity to operate a particular software product or version of it before deciding

whether to purchase it. As another example, for digitized music products a user may have an

opportunity to download and listen to samples of music before deciding whether to purchase a

15   compact disk.

Permitting users or consumers to purchase products results in certain advantages for both

sellers and consumers. A seller need not incur the expense of maintaining a retail store and

therefore may also store the products for sale in a location having reduced warehousing expenses.

The consumers may shop via their computers and therefore need not visit retail stores to make

20   purchases, potentially saving them time. Also, electronic sales of products may typically occur at

anytime, meaning that a consumer need not only shop during certain retail hours.

Electronic sales also involve potentially different retailer concerns than compared with

retail stores. For instance, when users enter credit card numbers and transmit those numbers over

2

the Internet, the on-line retailer should safeguard the numbers in order to prevent others from

obtaining them. In addition, when products are distributed in electronic form, an on-line retailer

should protect the products to prevent unauthorized access and distribution of the products.

A need exists for a system that addresses various concerns involving electronic

5   commerce.

SUMMARY OF THE INVENTION

Embodiments consistent with the present invention include an electronic commerce

system managing sale and distribution of digital products over the Internet or other type of

network. The embodiments may include, but do not necessarily require, certain features as

10   described below.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings are incorporated in and constitute a part of this specification

and, together with the description, explain the advantages and principles of the invention. In the

drawings,

15   .   FIG. 1 is a block diagram of an environment for providing electronic commerce;

FIG. 2 is a block diagram of an electronic commerce system;

FIG. 3 is a block diagram of exemplary hardware components of an electronic commerce

system; and

FIG. 4 is a flow chart of processing for an electronic commerce system.

3

DETAILED DESCRIPTION

Overview

As shown in FIG. 1, an end user at computer 100 enters a particular client web site 102

through connection 101 in order to shop for digital products. Digital products include any

5   information capable of being represented in digital form; examples of digital products include,

but are not limited to, the following: software applications; data, music, video, books, text,

audio-visual information, multimedia information, graphical information, fonts, and artistic

works.

The end user may view a page from the client's web site, for example, listing and

10   describing various products. When the end user indicates a desire to purchase a product by, for

example, selecting a purchase icon on the client's web page, the end user's connection 103 is

transferred to a commerce network server 104, and this typically occurs as a background process.

The end user may make a secure purchase 105 through page 106 from a digital product library,

and the purchased product is delivered electronically over the network connection, physically

15   such as by mail, or both electronically and physically, as represented by arrow 107. The purchase

typically involves the end user entering payment information, such as a credit card number, and

the commerce network server in response providing a secure download of the purchased product

to the end user's computer.

The commerce network server typically records information concerning the transaction,

20   such as the payment amount, the date and time of purchase, the product purchased, and

identification of the corresponding client web site. Therefore, the commerce network server may

4

provide these statistics to the clients in order for them to track purchases of their products and potentially use the information for marketing purposes.

Electronic Commerce System and Process

FIG. 2 is a block diagram of an electronic commerce system 200 illustrating interaction

5   between an end user machine 201 and a server 205, illustrating exemplary software modules, caches, and related databases. Server 205 may correspond with the commerce network server described above. As shown, end user machine 201 interacts through network 204, such as the Internet or other type of network, with server 205. End user machine 201 may also access a web page on an intermediate server and subsequently be transferred to server 205. End user machine

10   201 may interact directly with server 205 or interact through an agent module 203, which performs processing specific to a user at end user machine 201. End user machine 201 transmits a request 228 or 229 to server 205 from page 202, possibly including a request for a particular web page, a request to purchase and download a digital product, or a request for a search for a particular digital product.

15   In server 205, the request may be transmitted through a uniform resource locator (URL) spoofer module 206, which performs initial processing of the URL. In particular, the module changes the URL so that if a customer subsequently downloads a product, end user machine 201 by default saves the product under a file name associated with the product. Alternatively, the request may be transmitted directly to a web server module 207, which performs initial

20   processing on the request.

A log in module 208 receives the request and records certain data associated with the request, such as the user's request, Internet Protocol (IP) address, date and time, and particular

5

demographic information. The request is then transmitted to a security module 209, which uses

heuristics and other techniques in order to detect a person attempting to bypass particular steps of

the process, or otherwise receive or access the products without providing payment.

A fraud (payment) module 210 performs processing necessary to conduct the payment

5   transaction, including processing of credit card information. It also records payment-related

information.

A process request module 211 first checks a page/product cache 218 to determine if the

requested web page has been previously requested or, if applicable, the relevant product has been

previously requested. If so, process request module 211 accesses information in the cache in

10   order to avoid repeatedly generating the same information for the same or a similar request. If

applicable, process request module 211 also checks a search cache 217 to determine if the

requested search has been previously requested and, if so, it uses information in search cache 217

to generate particular output. A build cache module 212 within process request module 211, if

applicable, builds information for storage in either of the caches.

15   .   A build output module 213 next assembles information for the request. It first checks a

graphical user interface (GUI) implementation cache 216 to determine if a requested web page

has been previously constructed and provided. If so, it may use the information in the cache to

avoid unnecessary repeated processing of the same information. If applicable, a build cache

module 214 within build output module 213 creates information for storage in the cache.

20   A log completion module 215 performs final processing on the request. If the request is

only for a web page or search, log completion module 215 transmits the web page or search

information back to end user machine 201. If end user machine 201 uses agent module 203, log

6

completion module 215 may transmit information to an agent transaction server 219, which

constructs and creates the web page based upon that information and transfers it back to agent

module 203 for construction of the web page at page 202 on end user machine 201.

     If the request included a request for a product, log completion module 215 transmits the

5   request to a download processor 224, which checks with process request module 211 to verify

the authenticity of the request and perform a security check. If the request is valid, as determined

by information transmitted back from process request module 211, download processor 224

securely transmits the requested product from a product download database 225 to end user

machine 201. The transmitted product may be transmitted through agent transaction server 219

10 if end user machine 201 uses agent module 203.

     The following provides a description of each database shown in FIG. 2. A data

warehouse database 221 provides log in information along with keys, which provides an index to

associated information in a commerce database 223. Commerce database 223 contains data

tables storing information related to products and requests, such as a product table, order table,

15 and other such tables. A summary database 220 provides information from the data warehouse

database in summary form. Product download database 225 provides products in digital form for

retrieval by the download processor. This configuration provides the advantage of storing the

products without wrappers or associated passwords, and instead providing for a secure download

of the products. Wrappers or associated passwords may still be used, if desired.

20   A site GUI/feature control database 226 and default GUI/feature control database 227

may be accessed by process request module 211 and build output module 213 for storage and

retrieval of information related to web sites.

7

A credit card fraud database 222 stores credit card transaction information, including credit card processing history. Such information made thus be used in performing another security check. For example, the database may store a list of stolen credit card numbers.

5   FIG. 3 depicts an exemplary data processing system 300 with a computer 301 illustrating exemplary hardware components of end user machine 201, server 205, and an intermediate server, if used to transfer the end user's connection. Computer 301 includes a connection with a network 307 such as the Internet or other type of network, which may correspond with network 204. Computer 301 typically includes a memory 302, a secondary storage device 304, a processor 305, an input device 306, a display device 303, and an output device 308.

10   Memory 302 may include random access memory (RAM) or similar types of memory, and it may store one or more applications 309 for execution by processor 305. Applications 309 may correspond with the modules shown in FIG. 2. Secondary storage device 304 may include a hard disk drive, floppy disk drive, CD-ROM drive, or other types of non-volatile data storage, and it may correspond with the various databases shown in FIG. 2. Processor 305 may execute

15   applications or programs stored in memory 302 or secondary storage 304, or received from the Internet or other network 307. Input device 306 may include any device for entering information into computer 301, such as a keyboard, cursor-control device, or touch-screen. Display device 303 may include any type of device for presenting visual information such as, for example, a computer monitor or flat-screen display. Output device 308 may include any type of device for

20   presenting a hard copy of information, such as a printer, and other types of output devices include speakers or any device for providing information in audio form.

8

Although computer 301 is depicted with various components, one skilled in the art will

appreciate that this computer can contain additional or different components. In addition,

although aspects of an implementation consistent with the present invention are described as

being stored in memory, one skilled in the art will appreciate that these aspects can also be stored

5   on or read from other types of computer program products or computer-readable media, such as

secondary storage devices, including hard disks, floppy disks, or CD-ROM; a carrier wave from

the Internet or other network; or other forms of RAM or ROM. The computer-readable media

may include instructions for controlling a computer system, such as computer 301, to perform a

particular method.

10   FIG. 4 illustrates high-level processing 400 through electronic commerce system 200. In

process 400, web server module 207 receives a request from end user machine 201 (step 401).

Log-in module 208 processes the request to obtain log information (step 402). Security module

209 performs a security check (step 403). Fraud module 210 performs payment-related functions

(step 404). Process request module 211 checks page/product cache 218 (step 405) and checks

15   search cache 217, if applicable (step 406). Process request module 211 processes the request and

uses build cache module 212 to build a cache, if applicable (step 407). Build output module 213

checks GUI implementation cache 216 (step 408), assembles information for responding to the

request, and uses build cache module 214 to build a cache, if applicable (step 409).

Log completion module 215 performs final processing of the request (step 410), and it

20   determines if the request is a purchase request (step 411). If so, it transfers the request to

download processor 224 (step 412), which securely downloads the requested product and

delivers it to the end user machine 201 (step 413). If the request was not a purchase request, log

9

completion module 215 delivers page and optional search information to end user machine 201

(step 414).

Commerce System

This feature of electronic commerce system 200 involves providing a single transaction

5   point for processing of electronic commerce, generally involving the series of modules shown in

FIG. 2. Examples of the processing in this single transaction point include security, checking for

fraud, on-line reporting, and processing orders. The benefits of providing such processing

through a single transaction point typically include, for example, scalability, reliability of

processing, simplicity of design by avoiding multiple disparate systems, and avoiding repeated

10   processing.

Fraud and Security Area

This feature of electronic commerce system 200 involves preventing fraud and ensuring

security during electronic commerce transactions, generally including the security and fraud

(payment) modules shown in the block diagram. More particularly, it involves preventing users

15   from having access to certain stored data such as credit card information and products. It

involves preventing users from bypassing particular modules or processing in the system.

Global Web Site Management

This feature of electronic commerce system 200 involves providing centralized

management of host sites, managing all host sites through a central database. It may include, for

20   example, extending a look and feel of a particular web site into another web site. For example,

when an intermediate server transfers an end user's connection to a commerce network server, as

described with respect to FIG. 1, the commerce network server may transmit a page having the

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same look and feel as the page on the intermediate server, thus providing an apparent seamless transition to the end user.

This feature also may include making local changes to a large number of managed web sites. Therefore, instead of making similar changes to each individual web site, the system may

5   broadcast those particular changes and make the corresponding changes to the managed web sites. It thus provides an advantage, for example, of easily making changes to a large number of web sites. For example, it may automatically broadcast a few particular features every week to the managed web sites in order to regularly update the sites.

<center>Security Area</center>

10   The feature of electronic commerce system 200 provides for securely storing clients' products and providing a secure download process, typically without the use of wrappers or passwords. This feature generally involving the series of modules shown in FIG. 2. It includes a database type of security intended at least to simplify the purchase process for a user. A user typically need only enter a credit card number and in response receives a requested product.

15   <center>Cache Management for Dynamic Web Pages</center>

This feature of electronic commerce system 200 concerns a dynamic cache providing for a fast page response and dynamic pages, typically guaranteeing that pages contain current information. It generally involves caches 216, 217 and 218 shown in FIG. 2, providing cache processing for three areas: product searching; GUI implementation (particular features on a web

20   page); and static page building (a web page as a whole).

The complexity of product searching often affects speed of a response. Providing caching of information means that the same information need not be repeatedly retrieved from an external

11

database and constructed into a responsive web page. Rather, the information may be cached

locally and quickly retrieved in response to the same or a similar request. This feature maintains

up-to-date information by knowing to create and destroy information interactively for the caches.

For example, if a cached page contains a listing of payroll products, W-2 information may be

5   dynamically added to the information in the cache in order to make the page current.

Intelligent Agent

An intelligent agent includes an application that resides locally on a client machine in

order to perform processing specific to a user of the machine, generally involving agent module

203 and agent transaction server 219 shown in FIG. 2. It includes at least two aspects, a pull side

10   and a push side. The pull side involves the agent obtaining information and knowing how to link

to a server and provide the information to the user in a personal way, customized for that user. It

shields the user from the order process, for example, in order to simplify it. The agent may also

perform system management, for example, performing a background process that scans the user's

system in order to manage licensed software, perform archival control, and perform other such

15   processing.

The push side involves making special information available to the user through the

agent. For example, if the user already ordered a particular product, the agent may inform the

user of any bugs in the product, product upgrades, or related products. That information is

"pushed" to the agent from the server. The server may provide initial filtering of information

20   given to the agents, and the agents perform additional filtering in order to present the information

in a specific way to the customer.

12

Various aspects of an electronic commerce system described in this specification are further explained in the accompanying Appendixes, which are incorporated in and constitute a part of this specification. The Appendixes include the following documents: Appendix A: Digital River Fraud Prevention Technology; Appendix B: Marketing Software on the Internet;

5   and Appendix C: Technology Solutions to Electronic Transactions.

While the present invention has been described in connection with an exemplary embodiment, it will be understood that many modifications will be readily apparent to those skilled in the art, and this application is intended to cover any adaptations or variations thereof. For example, different labels for the various modules and databases, and various hardware

10   embodiments for the servers and machines, may be used without departing from the scope of the invention. This invention should be limited only by the claims and equivalents thereof.